

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant :	Noriki Fukunishi et al.	Art Unit :	3765
Serial No. :	10/565,836	Examiner :	Robert H. Muromoto, Jr.
Filed :	January 25, 2006	Conf. No. :	7651
Title :	FABRIC AND PRODUCTION PROCESS THEREOF		

**Mail Stop Appeal Brief - Patents**

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

**BRIEF ON APPEAL**

**(1) Real Party in Interest**

The real party in interest is Toyo Boseki Kabushiki Kaisha, the assignee of the pending application.

**(2) Related Appeals and Interferences**

There are no related appeals or interferences.

**(3) Status of Claims**

Claims 1, 2, 5-8, 11-17, and 21-25 stand rejected and are the subject of this appeal.

Claims 3-4, 9-10 and 18-20 have been previously canceled.

**(4) Status of Amendments**

Applicants filed an Amendment Under 37 CFR § 41.33 on April 14, 2009. Applicants have checked the PAIR system, but its status is not indicated.

**(5) Summary of Claimed Subject Matter**

Conventionally, silk or cotton has been used as cloth for containing a cotton or down filling. This combination is commonly used in many consumer items, such as outerwear. However, cloth made from natural fiber is generally low in tear strength and poor in durability. As a result (particularly in outerwear applications), the cotton or down filling begins to pass through the cloth.

A polyester multifilament, a nylon multifilament and a composite synthetic fiber fabric thereof have also been used in some applications cases because of their excellent mechanical properties. These synthetic fiber fabrics are frequently used for outerwear because they are relatively soft, light, windproof, water-repellent and strong. Attempts have been made to improve the properties of these synthetic fiber fabrics to meet desired levels of strength, lightness, softness and air permeability. However, prior to the present application, attempts at improving one or more of these properties was at the great expense of another of these properties. For example, prior attempts at increasing strength often have been at the cost of decreased softness and lightness.

The present application discloses a cloth that possesses, in combination, excellent lightness, air permeability, softness and tear strength characteristics. The fabric is particularly well-suited as, e.g., a down proof cloth for a down jacket.

#### Claim 1

Independent claim 1 recites a fabric having a thickness of 0.07 mm or less and a rip stop weave wherein the lip widths (*i.e.*, "rip widths") of the longitude and latitude thereof are each 5 mm or less. Claim 1 further recites that the tear strength in the warp cut direction and that in the weft cut direction according to the pendulum method are each from 10 to 50 N, the weight per square-meter is 50 g/m<sup>2</sup> or less, the air permeability is 1.5 cm<sup>3</sup>/cm<sup>2</sup>·s or less, and the yarn linear density is 25 dtex or less.

Examples are discussed at page 15, line 6 – page 19, line 22 and Table 1 of the specification. In illustrated Example 1, the fabric has a thickness of 0.066 mm, a rip stop width of 0.64 mm by 0.69 mm. Its tear strength in the warp cut direction is 18.6 N and 14.7 N in the weft cut direction. Its weight per unit area is 35.8 g/m<sup>2</sup>, its air permeability is 0.89 cm<sup>3</sup>/cm<sup>2</sup>·s and the yarn linear density is 22 dtex. As noted in the specification at page 18, the fabric of Example 1 is very soft, thin, and possesses excellent tear strength.

#### Claim 17

Independent claim 17 recites a fabric having a thickness of 0.07 mm or less and a rip stop weave wherein the lip widths (*i.e.*, "rip widths") of the longitude and latitude thereof are each 5

mm or less. Claim 17 further recites that the tear strength in the warp cut direction and that in the weft cut direction according to the pendulum method are each from 10 to 50 N, the weight per square-meter is 50 g/m<sup>2</sup> or less, the air permeability is 1.5 cm<sup>3</sup>/cm<sup>2</sup>·s or less, and the yarn linear density is 25 dtex or less. Claim 17 differs from claim 1 in that it also recites that the fabric is without resin finish and double side calendaring.

Examples are discussed at page 15, line 6 – page 19, line 22 and Table 1 of the specification. In illustrated Example 1, the fabric has a thickness of 0.066 mm, a rip stop width of 0.64 mm by 0.69 mm. Its tear strength in the warp cut direction is 18.6 N and 14.7 N in the weft cut direction. Its weight per unit area is 35.8 g/m<sup>2</sup>, its air permeability is 0.89 cm<sup>3</sup>/cm<sup>2</sup>·s and the yarn linear density is 22 dtex. Single side calendaring (and not double side calendaring) is conducted on the fabric, and there is no resin finish. As noted in the specification at page 18, the fabric of Example 1 is very soft, thin, and possesses excellent tear strength.

**(6) Grounds of Rejection to be Reviewed on Appeal**

(A) Whether claims 1, 2, 5-8, 11-17 and 21-25 are unpatentable under 35 U.S.C. § 103(a) as obvious over *New Type Sportswear Fabrics "Zebra" from Toyobo and Itochu*, JTN Monthly, December 1, 2000 ("Zebra") in view of the Background section of the present application.

**(7) Argument**

**(A) Claims 1, 2, 5-8, 11-17 and 21-25 are patentable over "Zebra" in view of the Background section of the present application**

The December 17, 2008 Final Office action rejected the claims under 35 U.S.C. § 103 as unpatentable over the Zebra reference in view of the Background section of the instant application.<sup>1</sup> Applicants respectfully submit that the rejections should be reversed.

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<sup>1</sup> Although the Office action purports to reject claims 1, 2, 5-8, 11-17 and 21-25 based on this combination of references, it appears to rely on the Background of the instant application in connection with its rejection of claims 11 and 12 only. The Office action does not rely on the Background of the instant application with respect to any of the features of claim 1.

The Examiner alleges that the Zebra reference discloses a fabric with the following features:

- a 33 dtex yarn for the warp and a 41 dtex yarn for the weft;
- a weight of 60 grams per square meter of ripstop fabric;
- tearing strength of 18.6 N in the warp cut direction and 9.8 N in the weft cut direction;
- air permeability of  $0.6 \text{ cm}^3/\text{cm}^2\cdot\text{s}$ ;
- although the claimed bending rigidity, fabric thickness and lip width **are not disclosed**, they "are all fabric properties that are directly related to the [foregoing] fabric properties . . . of Zebra."

12/17/08 Final Office action at pp. 2-5 ("Final Office Action").

Independent claim 1 recites a fabric having a thickness of 0.07 mm or less and a rip stop weave wherein the lip widths of the longitude and latitude thereof are each 5 mm or less. Claim 1 further recites that the tear strength in the warp cut direction and that in the weft cut direction according to the pendulum method are each from 10 to 50 N, the weight per square-meter is  $50 \text{ g/m}^2$  or less, the air permeability is  $1.5 \text{ cm}^3/\text{cm}^2\cdot\text{s}$  or less, and the yarn linear density is 25 dtex or less. Thus, compared to features of claim 1, the fabric disclosed in the Zebra reference:

- has a warp yarn that is about **32% thicker** than the maximum claimed;
- has a weft yarn that is about **64% thicker** than the maximum claimed;
- has a weight that is **10% heavier** than the maximum claimed;
- despite being a heavier fabric with thicker yarn, has a tear strength in the weft cut direction that is **2% weaker** than the minimum claimed; and
- **does not disclose** the claimed fabric thickness or lip width.

The Examiner attempts to overcome these **five** deficiencies in the Zebra reference by arguing that (1) the differences between the Zebra reference and the claim 1 are mere "changes in size/proportion" and (2) because "all structure and most material properties are taught by

Zebra," the remaining properties are "inherently present." Final Office action at pages 4-5, 7.<sup>2</sup> Applicants respectfully disagree with the conclusion of unpatentability. In fact, the Office action fails to make even a *prima facie* case of obviousness. See MPEP § 706.02(j).

**(1) The differences between the Zebra reference and the claimed subject matter are not mere "changes in size/proportion"**

Applicants respectfully submit that the Examiner improperly characterizes the differences between the claimed subject matter and the Zebra reference as mere "changes in size/proportion." As the authority that the Examiner relies upon states, when the "claimed device" performs differently than the prior art, it is not a mere change in size/proportion:

[T]he Federal Circuit held that, where the *only difference* between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions *would not perform differently than the prior art device*, the claimed device was not patentably distinct from the prior art device. (*citing Gardner v. TEC Systems, Inc.*, 725 F.3d 1338 (Fed. Cir. 1984) (emphasis added).

Final Office action at p. 5 (*quoting* MPEP § 2144.04).

Applicants respectfully submit that this authority is inapposite to the instant claims. First, the "recitation of relative dimensions" is not the "only difference" between claim 1 and the Zebra reference. As the Examiner's own analysis of the Zebra reference reveals (summarized herein at page 4), there are numerous differences between the claimed subject matter and the cited art. See Final Office action at pp. 2-5.

Second, the fabric of claim 1 *would perform differently* than the cited art. The Examiner argues that, in light of this authority, it would have been obvious "to produce a fabric with the slight variation in weight and yarn linear density claimed." Final Office action at p. 4. But the Examiner ignores that the particular weight and yarn linear density are claimed *along with* minimum tear strengths. One of ordinary skill in the art would have expected a direct

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<sup>2</sup> In the December 17, 2008 Final action, the Examiner expends four-and-a-half pages of the six page argument (*i.e.*, 75%) arguing why features in claim 1, which are not present in the cited art, can be ignored. See Final Office action, pp. 3-7.

relationship between weight/yarn linear density and tear strength. Claim 1, however, recites *high* tear strength combined with *low* weight and yarn linear density. This combination is not disclosed by the Zebra reference. Instead, the Zebra reference discloses a heavier fabric with thicker yarns, yet is *weaker* than the fabric claimed. The Examiner's implicit argument that one may simply *choose* to decrease weight and yarn linear density while maintaining high tear strength has no support in the references or other evidence of record.<sup>3</sup> Applicants respectfully submit that the Examiner's characterization of the claimed weight as a mere "dimension" that can be changed at will (1) fails to account for technical realities and (2) fails to consider the claimed subject matter as a whole, which recites low weight and yarn density in combination with comparatively high minimum tear strengths. Applicants' claim 1 recites a fabric that does perform differently from the Zebra reference because it is lighter, yet stronger.

In response to the Applicants' position that the fabric of the Zebra reference functions differently from the claimed fabric, the Examiner argued that it is sufficient that the Zebra reference discloses, but does not achieve, the art-recognized goal of strong, soft fabrics:

The prior art reference clearly discloses, the concept of "lighter, stronger, and more beautiful fabric" and "despite being fine denier and high density fabrics, they maintain sufficient tearing strength because of a new way of finishing." These statements are nearly verbatim to the stated objectives/functionality of the instant fabric. So they both clearly try to address the well-known problem of fabric hand (lightness, comfort, etc.) versus fabric strength.

Final Office action at p. 7 (emphasis omitted).

Applicants respectfully disagree. Although the Zebra reference may "try to address the well-known problem of fabric hand ... versus fabric strength," it does not succeed. The Examiner's own analysis of the Zebra reference acknowledges its significantly worse characteristics compared to those set forth in claim 1. See Final Office action at pp. 2-5. It is undisputed that the Zebra fabric is heavier and utilizes thicker yarns, but is nonetheless weaker

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<sup>3</sup> To the contrary, if one were to "scale" the features of the Zebra fabric closer to those set forth in claim 1 (e.g., decrease the yarn thickness and weight per unit area), one of ordinary skill would expect its tear strength to decrease, not increase to the claimed range.

than the fabric of claim 1. If anything, the Examiner's acknowledgement of the "well known problem" solved by the Applicants' strong, light fabric should militate for a finding of non-obviousness.

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**(2) The claimed "properties" are not "inherently present" in the fabric of the Zebra reference**

Relying on MPEP § 2112.01, the Examiner argues that because "all structure and most material properties are taught by Zebra, it follows that the fabric's bending rigidity, fabric thickness, lip width, cover factor, and glossiness as recited in the claims are inherently present in the Zebra fabric. Fabric Office action at p. 6. This finding of inherency "can be rebutted by evidence showing that the prior art products do not necessarily possess the characteristics of the claimed product." MPEP § 2112.01 (emphasis in original).

With respect to the claimed fabric thickness, the Zebra reference discloses that the finished density per inch of fabric is 200 threads for warp and 150 threads for weft, which is similar to the examples disclosed in the instant application. *See* Zebra at p. 2; Application at Table 1. However, as the Examiner recognizes, each yarn in the fabric disclosed in the Zebra reference is significantly thicker than what is claimed (**32% - 64% thicker**). *See* Final Office action at p. 2. Examples of the fabric of claim 1, which use much thinner yarn than the fabric of the Zebra reference, have thicknesses of 0.066 mm and 0.069 mm. *See* Specification at Table 1. Therefore, Applicants submit that the fabric disclosed in the Zebra reference does not, and indeed cannot, "necessarily" have a thickness of "0.07 mm or less" because the fabric is of similar thread density but includes threads that are far thicker than claimed.

With respect to the claimed "lip width," MPEP § 2112.01 and the case law on which it is based draw a distinction between "structure" and "property." For example, in *Titanium Metals Corp. v. Banner*, 778 F.2d 775 (Fed. Cir. 1985), the claimed "structure" was the composition of a particular alloy and the claimed "property" was corrosion resistance. MPEP § 2112.01. There, the invalidating reference disclosed an identical alloy composition but was silent as to corrosion resistance. *Titanium Metals Corp.*, 778 F.2d at 782. The Court based its ruling on the fact that the claimed corrosion resistance was an inherent property of the claimed structure (*i.e.*, the alloy

composition). *See id.* With respect to claim 1, however, the Examiner ignores this fundamental distinction because lip width is a “structure,” not a “property.”

Applicants respectfully submit that the claimed lip widths cannot be inherent in the fabric of the Zebra reference. Generally, the lip width (*i.e.*, “rip width”) refers to the rip stop fabric design width. *See* Final Office action at p. 5. More particularly, the lip width describes the distance between intersections of the rip stop lattice. As such, the lip width is an indication of how the rip stop weave has been constructed. As exemplified by Figures 1 and 2 of the instant application, two otherwise similar fabrics that possess features within the scope of claim 1 have lip widths that vary by about 100%. *See* Specification at Table 1, “Rip stop width.” There is no reason that the fabric of the Zebra reference, which has numerous structures and properties that differ from claim 1, *necessarily* has the claimed lip widths of 5 mm or less.

Moreover, Applicants believe that the claimed lip widths are closely related to the achievement of the claimed high tear strength despite low weight – features that the Zebra fabric plainly lacks. *See* Final Office action at p. 2 (noting that the Zebra fabric is heavier and weaker). Applicants believe that by setting the lip width to 5 mm or less results in a greater number of flexible “restraint points” (*i.e.*, the intersections of the rip stop lattice). Applicants believe that because the fiber becomes easier to slip at the restraint points, the fabric itself becomes more flexible to bend against instantaneous stress and the tear strength becomes unexpectedly high. *See, e.g.*, Application at page 11, lines 1-10. Indeed, one of ordinary skill would understand that if shearing stress is applied to an inflexible cloth in the direction perpendicular thereto, the shearing force is applied in the direction perpendicular to the fiber axis direction of the yarn, easily tearing the yarn. As explained in the specification, if the fabric is flexible, *e.g.*, as the result of the restraint points, the yarn bends practically instantaneously upon application of stress and the shearing stress is dispersed into the direction of the fiber axis and directions perpendicular to the fiber axis direction. *See, e.g.*, Application at page 11, lines 11 – 24. Applicants believe that this is one reason why the fabric of claim 1 exhibits unexpectedly high tear strength. *See id.* Because the fabric of Zebra reference does not exhibit any evidence of the beneficial results associated with the claimed lip width, Applicants submit that the Examiner’s finding of inherency is incorrect.



The Examiner's remarks regarding the rejection of claim 1 focus largely on theories as to why the features recited in the claim can be ignored. Applicants respectfully submit that the Examiner's approach is inconsistent with the law. "It is elementary patent law that *all limitations are material.*" *Glaxo, Inc. v. Novopharm, Ltd.*, 110 F.3d 1562, 1566 (Fed. Cir. 1997); *see also* MPEP § 2144.08 ("When evaluating the scope of a claim, every limitation in the claim must be considered.")

Comparing the features set out in claim 1 to the Zebra reference reveals that it fails to disclose or render obvious the subject matter of claim 1 at least because the fabric disclosed in the Zebra reference (1) has a warp yarn that is about **32% thicker** than the maximum claimed, (2) has a weft yarn that is about **64% thicker** than the maximum claimed, (3) has a weight that is **10% heavier** than the maximum claimed, (4) despite being a heavier fabric with thicker yarn, has a tear strength in the weft cut direction that is **2% weaker** than the minimum claimed and (5) **does not disclose** (inherently or otherwise) the claimed fabric thickness or lip width. The Background section of the application, which the Examiner does not rely on for the rejection of claim 1, does not remedy the deficiencies of the Zebra reference. Accordingly, claim 1 is patentable over the Zebra reference and the Background section of the application, alone or in combination.

Dependent claims 2, 5-8, 11-16 and 24-25 recite additional features and are independently patentable.

Independent claim 17 differs from claim 1 in that it also recites that the fabric is without resin finish and double side calendaring. Accordingly, the rejections of claim 17 as well as dependent claims 21-23 should be reversed.

Applicants respectfully request reversal of the claim rejections.

#### Conclusion

In view of the forgoing remarks, Applicants respectfully request reversal of all claim rejections.

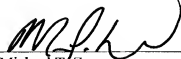
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Respectfully submitted,

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### **Appendix of Claims**

1. A fabric having a thickness of 0.07 mm or less and comprising a rip stop weave wherein the lip widths of the longitude and latitude thereof are each 5 mm or less wherein the tear strength in the warp cut direction and that in the weft cut direction according to the pendulum method are each from 10 to 50 N, the weight per square-meter is 50 g/m<sup>2</sup> or less, the air permeability is 1.5 cm<sup>3</sup>/cm<sup>2</sup>-s or less, and the yarn linear density is 25 dtex or less.

2. The fabric according to claim 1, wherein the bending rigidity according to KES is 0.025 gf·cm<sup>2</sup>/cm or less.

5. The fabric according to claim 1, wherein the cover factor is from 1600 to 2000.

6. The fabric according to claim 2, wherein the cover factor is from 1600 to 2000.

7. The fabric according to claim 1, wherein the ratio of the warp density to the weft density is from 0.9 to 1.2.

8. The fabric according to claim 2, wherein the ratio of the warp density to the weft density is from 0.9 to 1.2.

11. The fabric according to claim 1, comprising a polyamide multifilament wherein the fiber fineness is 1.2 dtex or less.

12. The fabric according to claim 2, comprising a polyamide multifilament wherein the fiber fineness is 1.2 dtex or less.

13. The fabric according to claim 1, comprising a nylon 6 multifilament wherein the fiber fineness is 1.2 dtex or less.

14. The fabric according to claim 2, comprising a nylon 6 multifilament wherein the fiber fineness is 1.2 dtex or less.

15. The fabric according to claim 1, comprising a rip stop weave wherein the lip widths of the longitude and latitude thereof are each 1.5 mm or less.

16. The fabric according to claim 1, wherein the lip widths of the longitude and latitude of the rip stop weave are each 1.5 mm or less.

17. A fabric having a thickness of 0.07 mm or less and comprising a rip stop weave wherein the lip widths of the longitude and latitude thereof are each 5 mm or less wherein the tear strength in the warp cut direction and that in the weft cut direction according to the pendulum method are each from 10 to 50 N, the weight per square-meter is 50 g/m<sup>2</sup> or less, the air permeability is 1.5 cm<sup>3</sup>/cm<sup>2</sup>·s or less, and the yarn linear density is 25 dtex or less wherein the fabric is without resin finish and double side calendaring.

21. The fabric according to claim 17, wherein the bending rigidity according to KES is 0.025 gf·cm<sup>2</sup>/cm or less.

22. The fabric according to claim 17 with single side calendaring.

23. The fabric according to claim 21 with single side calendaring.

24. The fabric according to claim 1, wherein the glossiness of one surface is 3.0 or less.

25. The fabric according to claim 2, wherein the glossiness of one surface is 3.0 or less.

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### **Evidence Appendix**

None.

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### **Related Proceedings Appendix**

None.